UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,260	04/20/2004	Taisuke Hosokawa	P15657-A YAM.058	2397

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MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

EXAMINER
FLORES, LEON

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/827,260	HOSOKAWA, TAISUKE
	Examiner	**Art Unit**	
	Leon Flores	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 September 2007</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-13, 17 and 18</u> is/are rejected.

7)☒ Claim(s) <u>14-16, 19 and 20</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>28 September 2007</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 1-4 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
        obviousness or nonobviousness.

4.   **Claims (1, 3, 9-13, 17-18) are rejected under 35 U.S.C. 103(a) as being**

unpatentable over Hirata (US Publication 2001/0004373 A1) in view of Uda (US

Patent 6,226,505 B1), and further in view of Kondo.(US Patent 6,597,728 B1)

        Re claim 1, Hirata discloses a frequency offset detection processing system

comprising: a TCXO (Temperature Compensated Crystal Oscillator, Temperature

Compensated X'tal Oscillator) which generates a reference frequency; a demodulation

unit which demodulates a reception signal; a frequency offset detection unit which

detects a frequency offset from a phase moving amount between symbols of adjacent

pilot signals; and an AFC (Auto Frequency Control) control unit (See fig. 7), a TCXO

control unit which corrects TCXO control on the basis of the frequency offset calculated

by said correction value calculation unit.(See fig. 7)

But the reference of Hirata fails to explicitly teach that wherein said AFC control

unit comprises: a majority determination unit which determines whether each of phase

moving amount detection values by a plurality of frequency offsets, which are detected

for a predetermined time and read out from said frequency offset detection unit, is a

positive value or a negative value, and totalizes to determine which of the positive

values and the negative values are larger in number; a detection value conversion unit

which converts the phase moving amount detection values read out from said frequency

offset detection unit in accordance with a majority determination result from said

majority determination unit.

However, Uda does. (See figs 2 & 3 & descriptions) Uda discloses an automatic

frequency correction apparatus that determines if the offset is either a positive or

negative by means of a positive counter and a negative counter, and based on this

result, it is capable of selecting a correction amount.

Therefore, taking the combined teachings of Hirata and Uda as a whole. It would

have been obvious to one of ordinary skills in the art to have incorporated this feature

into the system of Hirata, in the manner as claimed and as taught by Uda, for the benefit

of performing automatic frequency control.

The combination of Hirata and Uda discloses the limitations as claimed above, except they fail to explicitly teach an averaging processing unit which executes processing for adding the phase moving amount detection values read out from said frequency offset detection unit and converted by said detection value conversion unit and dividing a sum by the number of added values; a correction value calculation unit which calculates a frequency offset from the phase moving amounts after averaging processing by said averaging processing unit.

However, Kondo does. (See fig. 2) Kondo discloses an averaging processing unit which executes processing for adding the phase moving amount detection values read out from said frequency offset detection unit (See fig. 2: 4 & 5), a correction value calculation unit which calculates a frequency offset from the phase moving amounts after averaging processing by said averaging processing unit.(See fig. 2: 6)

Therefore, taking the combined teachings of Hirata, Uda, and Kondo as a whole. It would have been obvious to one of ordinary skill in the art to have incorporated these features into the system of Hirata, as modified by Uda, in the manner as claimed and as taught by Kondo, for the benefit of determining frequency correction. (See col. 8, lines 31-35)

Claim 3 is a method claim corresponding to system claim 1. Hence, the steps performed in method claim 3 would have necessitated the elements in system claim 1. Therefore, claim 3 has been analyzed and rejected w/r to claim 1 above.

Re claim 9, the combination of Hirata, Uda, and Kondo further discloses that

wherein said majority determination unit determines the shift direction of a frequency

offset by majority determination before averaging processing and making the signs of

detection values coincide from the majority determination result. (In Kondo, see fig. 2: 2

& 4. Furthermore, a phase shift detection section determines the phase shift before

averaging.)

Re claim 10, the combination of Hirata, Uda, and Kondo further discloses that

wherein said majority determination unit determines the shift direction of the frequency

offset. (In Uda, see figs. 2 & 3, and their descriptions)

Re claim 11, the combination of Hirata, Uda, and Kondo further discloses that

wherein detection values with a sign, which are determined as smaller in number by the

majority determination unit, are regarded as values whose shift direction of the

frequency offset is erroneously determined. (In Uda, see col. 5, lines 44-54)

Re claim 12, the combination of Hirata, Uda, and Kondo further discloses that

wherein when it is determined as a result of majority determination that a number of

negative detection values is smaller, the negative detection values are converted. (In

Uda, see col. 5, lines 44-54)

Re claim 13, the combination of Hirata, Uda, and Kondo further discloses that wherein the signs of all detection values are made to coincide by determining the shift direction before the averaging processing. (In Kondo, see fig. 2: 2 & 4. Furthermore, a phase shift detection section determines the phase shift before averaging.)

Claim 17 has been analyzed and rejected w/r to claim 1 above.

Re claim 18, the combination of Hirata, Uda, and Kondo further discloses that wherein said majority determination unit determines the shift direction of a frequency offset by majority determination before averaging processing and making the signs of detection values coincide from the majority determination result. (In Kondo, see fig. 2: 2 & 4. Furthermore, a phase shift detection section determines the phase shift before averaging.)

5.   Claims (2 & 4-8) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata (US Publication 2001/0004373 A1), Uda (US Patent 6,226,505 B1), and Kondo.(US Patent 6,597,728 B1), as applied to claim 1 above, and further in view of Maltsev et al. (hereinafter Maltsev) (US Publication 2004/0190438 A1)

Re claim 2, the combination of Hirata, Uda, and Kondo fails to explicitly teach that wherein in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of negative detection values is smaller, said detection value conversion unit converts the negative detection

values to +360° + the negative detection values; and when it is determined as the

majority determination result that the number of positive detection values is smaller,

said detection value conversion unit converts the positive detection values to -360° +

the positive detection values.

However, the combination of of Hirata, Uda, and Kondo does suggest that a

correction amount selection section selects a required level from correction amount data

of a plurality of levels which are stored in the memory on the basis of the state

determination result. (In Uda, see figs 2 & 3, and col. 5, lines 61-64)

Therefore, it would have been obvious to one of ordinary skills in the art to have

incorporated this feature into the system of Hirata, as modified by Uda and Kondo, for

the benefit of performing automatic frequency control.

But the combination of Hirata, Uda, and Kondo fails to explicitly teach that the

amount of correction is +/- 360.

However, Maltsev does. (See fig. 2: 200 & paragraph 27) Maltsev discloses a

phase corrector that adjusts phase shift by a multiple of 360 degrees. When the phase

difference exceeds 180 degrees, and the sign of the first phase shift estimate is positive

it adds +360. However, when the sign is negative it adds –360. Furthermore, one

skilled in the art would know that frequency correction may be employed by taking the

average phase shifts between adjacent symbols. In this case, if we take the average at

the output of the phase corrector, when the phase has been corrected, the frequency

can be corrected.

Therefore, taking the combined teachings of Hirata, Uda, Kondo, and Maltsev as a whole. It would have been obvious to one of ordinary skill in the art to have incorporated these features into the system of Hirata, as modified by Uda and Kondo, in the manner as claimed and as taught by Kondo, for the benefit of determining frequency correction.

Claim 4 is a method claim corresponding to system claim 2. Hence, the steps performed in method claim 4 would have necessitated the elements in system claim 2. Therefore, claim 4 has been analyzed and rejected w/r to claim 2 above.

Re claim 5, the combination of Hirata, Uda, Kondo, and Maltsev further discloses that wherein in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of negative detection values is smaller, said detection value conversion unit converts the negative detection values to +360° + the negative detection values. (This claim has been rejected w/r to claim 2 above.)

Re claim 6, the combination of Hirata, Uda, Kondo, and Maltsev further discloses that wherein in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of positive detection values is smaller, said detection value conversion unit converts the positive detection

values to -360° + the positive detection values. (This claim has been rejected w/r to

claim 2 above.)

Re claim 7, the combination of Hirata, Uda, Kondo, and Maltsev further discloses

that wherein the detection value conversion further comprises in converting the phase

moving amount detection values, when it is determined as the majority determination

result that the number of negative detection values is smaller, converting the negative

detection values to +360° + the negative detection values. (This claim has been rejected

w/r to claim 2 above.)

Re claim 8, the combination of Hirata, Uda, Kondo, and Maltsev further discloses

that wherein the detection value conversion further comprises in converting the phase

moving amount detection values, when it is determined as the majority determination

result that the number of positive detection values is smaller, converting the positive

detection values to -360° + the positive detection values. (This claim has been rejected

w/r to claim 2 above.)

Allowable Subject Matter

6.   Claims (14-16 & 19-20) are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Re claim 14, Prior art fails to teach that *"wherein majority determination is performed after weighting is executed in accordance with one of reception power and magnitude of a phase moving amount".*

Re claim 15, Prior art fails to teach that *"wherein a distribution of the phase shitt detection values atter conversion in accordance with a majority determination result from said majority determination result in a Gaussian distribution".* Claim 16 depends on claim 15 above.

Re claim 19, Prior art fails to teach that *"wherein a distribution of the phase shift detection values after conversion in accordance with a majority determination result from said majority determination result in a Gaussian distribution".*

Re claim 20, Prior art fails to teach that *"wherein a central value (actual phase shift) of the distribution and an average value (detection value after processing) of the distribution have approximately the same value".*

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
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DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER